

Extraction of nanohydroxyapatite from waste bovine bone using alkaline digestion method

ABSTRACT

Bovine bones from food waste are discarded without any effort to reclaim its potential as calcium sources. This study reports the preparation and characterization of nano hydroxyapatite from bovine bone waste (BvHAp) collected from local restaurant using alkaline digestion method. Fourier transformed infrared spectroscopy (FTIR) and X-ray diffraction (XRD) analyses were used to verify the presence of hydroxyapatite in the bovine bone waste. Scanning electron microscopy (SEM) was also used to study the morphology of the apatite obtained. The SEM analysis revealed that the diameter size of nanoparticles BvHAp were around 20-30 nm. The energy dispersive X-ray (EDX) result indicated the calcium/phosphorous (Ca/P) ratio of obtained BvHAp after sintering at 1200 °C is 1.75 which is very closed to the theoretical value. The natural BvHAp produced has a potential source for biomaterials and food supplement applications.

Keyword: Bovine bone; Food waste; Alkaline digestion method